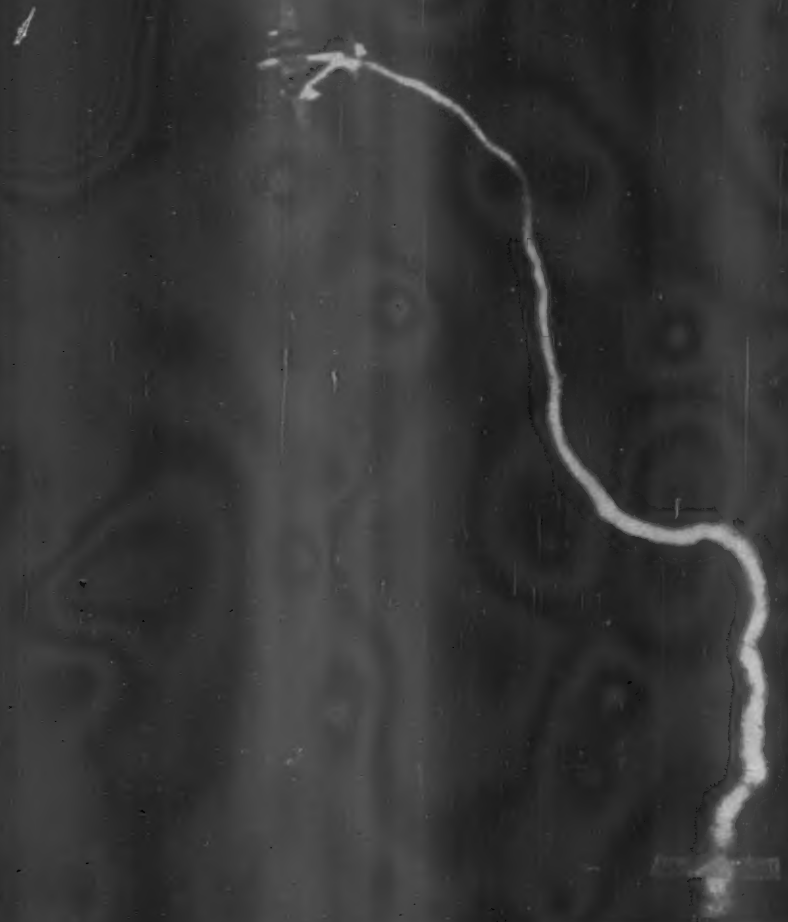
15¢

$5.50 A YEAR

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Falcon Strikes

A SCIENCE SERVICE PUBLICATION

NUTRITION

# Up I.Q. by Mother's Diet

**Test indicates that babies are smarter when expectant mothers take plenty of vitamins and continue doses through the nursing period.**

➤ IF EXPECTANT mothers want their babies to be smart children, they will themselves take plenty of vitamins during pregnancy and while nursing the baby.

Proof that extra vitamins for mothers during pregnancy and nursing can increase the I.Q. of their children at least up to the age of four comes from a study by Teachers College, Columbia University, with a grant from the Williams-Waterman Fund for Combat of Dietary Diseases.

Some 2,400 mothers and 1,699 of their children were covered by the study. One half of the mothers were maternity clinic patients at the Frontier Nursing Service at Wendover in the rural Cumberland Mountain area of eastern Kentucky. The other half were from the crowded city tenement district of Norfolk, Va., and were patients at the King's Daughters Maternity Center there.

In each group some mothers got vitamin C (ascorbic acid) pills; some got thiamine, or vitamin B-1 pills; some got pills containing thiamine, iron, and riboflavin and niacinamide which are B vitamins; and some got placebos, or "duds" containing no vitamins. The pills were all made and donated by Hoffmann-LaRoche, Inc., of Nutley, N. J.

The psychologists who tested the children at age three, and in some cases at age four, did not know which pills the mothers had had.

At the age of four, in the Norfolk group, children from the vitamin-taking mothers surpassed the placebo group by 5.2 in intelligence quotient, taking the average for the three vitamin groups.

Tests of 811 of the Kentucky children at about age three showed a mean I.Q. of 107.6 for the total group. But no significant differences were found in I.Q. between the vitamin and the non-vitamin group. This, the scientists pointed out, may be due to several reasons: 1. The Kentucky mothers, living in a rural area, probably ate a better diet than the city women. 2. The Kentucky mothers were not as willing to take the vitamin pills and may not have taken them as faithfully as the city women. 3. The Kentucky children were so shy and unwilling to talk that the tests of their intelligence may not have been as satisfactory.

The study was supervised by Dr. Arthur I. Gates, head of the department of psychological foundations, Teachers College. Drs. Ruth F. Harrell and Ella Woodyard, psychologists, were in charge of fieldwork, tests, examinations and preliminary statistical analysis.

The amounts of vitamins in the pills were higher, in the case of vitamin C about twice as high, than those usually recommended for pregnant and nursing women.

Whether the children's I.Q. would be increased by vitamin supplements for mothers who are getting in their diet the recommended or more amounts of these vitamins was not clearly shown by the study. For families living in poorer city environments the vitamins do have an effect on the child's I.Q. up to the age of four at least.

Science News Letter, March 26, 1955

INVENTION

## Quick-Cooling Ice Cube Has Hour-Glass Hole

➤ "THE PROBLEM confronting both homemakers and bartenders has been to be able to cool a glass of beverage quickly."

This was the hot-weather problem confronting Carlyle M. Ashley of Fayetteville, N. Y., who received patent No. 2,703,964 for inventing an ice cube that might solve the predicament. Mr. Ashley's ice-cube is square like most other ice-cubes, but has an hour-glass opening on the inside. This, he says, "will cool the liquid which is to be cooled quicker than any of the present pieces of ice."

The secret of the new ice-cube is that it provides a greater surface for a faster heat exchange between the ice and liquid. The inventor assigned the ice-cube patent rights to the Carrier Corporation of Syracuse, N. Y.

Science News Letter, March 26, 1955

METEOROLOGY

# Sees Warm, Dry Summer

➤ ANOTHER DRY, warm summer, particularly in the southern United States, has been foreseen by Dr. H. C. Willett, professor of meteorology at Massachusetts Institute of Technology.

Summer in 1955 "will not be too different" from 1954, Dr. Willett predicted. Last year's weather was marked by heat and drought, some areas in the southern half of the country being seared for the third or fourth straight year.

Drought conditions will continue there this summer if Dr. Willett's forecast is correct.

Normal summer weather will prevail over the West Coast and the northern part of the country, he predicted.

Reason that the South will be hardest hit, Dr. Willett explained, is that storm tracks and weather patterns are shifting southward. They hit a northerly peak about 15 years ago and, since then, have been receding slowly southward.

Thus during the Dustbowl period of the 1930's, the central and northern sections of the Midwest carried the brunt of the drought, since storm tracks then were gradually moving northward.

The present southward shift, Dr. Willett said, is part of the warm-up of the last 40 years associated with changes in the sun's activity as shown by the sunspot cycle.

Dr. Willett bases his prediction on trends shown during two sunspot cycles combined, finding a current weather pattern similar to a past one, and on a statistical study of recent air mass movements.

He is one of the few recognized meteorologists who ventures to make a weather forecast for several months in advance. Dr. Willett's theory is that solar eruptions and sunspots, irregularly changing the character of the sun's radiation, act upon the earth's outer atmosphere, resulting in large-scale, long-period weather changes.

Sunspot activity varies in cycles that usually last from 10 to 12 years, averaging about 11 years. Dr. Willett believes these cycles can be used to indicate weather trends when two of them are combined.

If overall sunspot activity for the double cycle is high, as it is currently, then the associated weather cycle is 20 years. Weather in 1957, he said, should correspond to that in 1937. When sunspot activity rates are lower than usual over the doubled period, the associated weather changes may take 24 years instead of 20, Dr. Willett said.

The present cycle seems to be "a little ahead" of the equivalent cycle 20 years ago. For the last 40 years, the double sunspot cycle has been running in 20-year patterns.

Science News Letter, March 26, 1955

INVENTION

## Convertible Hardtop Really Convertible

➤ WITH THE coming of spring motorists will be pleased to learn that a hard top convertible that converts has been invented.

The convertible top is made of metal panels that automatically fold one on top of the other onto a shelf in the trunk. The top's inventors, Harvey J. Anschuetz of Plymouth and Louis J. Serratoni of Walled Lake, Mich., also claim a unique linking system for the panels, which makes the convertible look like a sedan and, at the same time makes the car weather-tight when the top is up.

The "collapsible roof" received patent No. 2,704,225. The patent rights were assigned to the Kaiser Motors Corporation, Nevada.

Science News Letter, March 26, 1955

GENERAL SCIENCE

# Overpopulation With War

**Even if there were an H-Bomb war and the populations of the United States and Russia were wiped out, their numbers could be replaced in ten years.**

➤ WAR, EVEN a disastrous war fought with hydrogen and atomic bombs, could not be expected to have much effect on the prospect of world overpopulation, Dr. Dudley Kirk of The Population Council, Inc., New York, pointed out.

Even if the entire population of both Russia and the United States should be entirely wiped out in such a conflict, their numbers would be completely replaced in about ten years of normal world population growth, Dr. Kirk said.

The fate of mankind will be decided in Asia, he believes. But he does not base this conclusion on the threat to world peace of the Chinese Communists or the explosive nature of the Formosa situation. It is based on the tremendous growth of Chinese population.

China is now reported to be growing at the rate of 12,000,000 persons each year. Such a tremendous growth would be a serious handicap to economic development in so crowded a land no matter what kind of political system they must live under.

Looking into the future, the greatest population increase is expected in Asia, although every major region of the earth will probably continue to grow, at least up to 1980.

So the future of mankind may very well hinge on how rapidly the Chinese adopt the small family patterns so widespread elsewhere.

If the Chinese people decide they want small families, the Communist regime is not likely to be able to prevent it, Dr. Kirk points out.

"Future birth rates are not matters that will be decided in the long run by governmental policies," he explains.

"The future trend of the birth rate in the underdeveloped areas, as in the industrial West, will be a matter of choice and action of millions of individuals. These are only within limits amenable to the influence of public policy calculated to change population trends."

The Communists have failed to prevent reduction of the birth rate in Russia, Dr. Kirk pointed out. Experts from the Soviet Union at the recent World Population Conference in Rome revealed that the present birth rate in the Soviet Union is approximately 24 per thousand population, or slightly less than that in the United States. This represents a drastic decline from the prewar figure of 38 per thousand.

The way in which individual decisions to limit family size can act in opposition to strong cultural traditions is shown in the case of Japan. Once Japan became predominantly urban and industrial, the forces of Oriental love of family and ancestor worship failed to retard the decline of the birth rate.

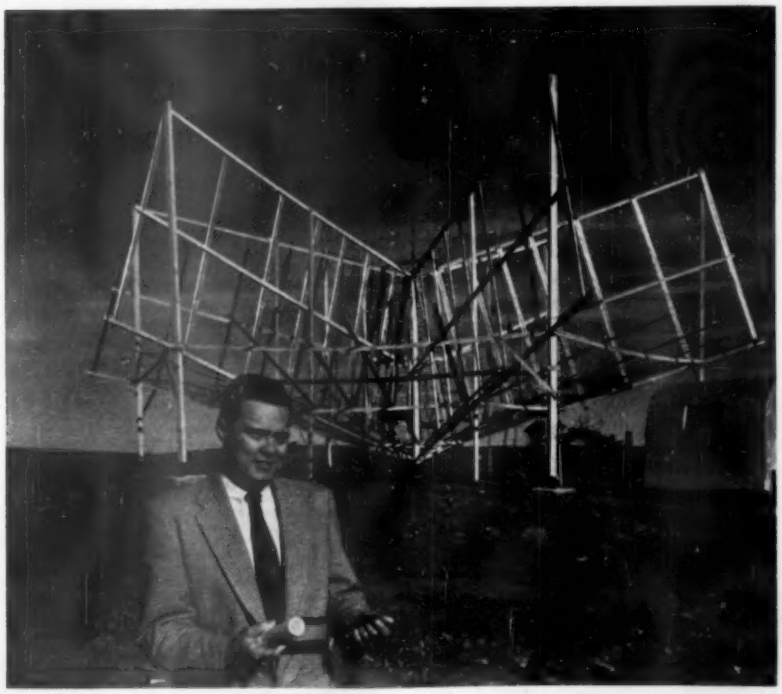
The specific means used to limit family size may differ from country to country. In Ireland, it is late marriage. In Western Europe, generally, it is birth control. But in Japan it is by abortions, now numbering over one million a year.

The tremendous effect of modern public health practices on population growth is demonstrated in Ceylon. There, systematic spraying with DDT to battle malaria cut the death rate in half in only eight years.

Of equal importance to the limiting of family size in Asia, Dr. Kirk rated the success and speed with which the two-thirds of the world population living in underdeveloped areas are able to achieve the economic and social transformation they are struggling to attain.

Dr. Kirk's report appears in *Eugenics Quarterly* (March).

Science News Letter, March 26, 1955



*TRACKS METEORS—This spidery antenna at Stanford University throws a radar net across the sky to detect tiny meteors. The device is expected to provide information useful to radio communications, weather forecasting and astronomy. Dr. Von R. Eshleman, standing in the foreground, directs operation of the antenna.*

MEDICINE

## Mushroom Antibiotic Helps Typhoid Patients

➤ AN ANTI-GERM chemical, or antibiotic, from mushrooms is giving "encouraging results" in treatment of typhoid fever patients at Carmichael Medical College Hospital, Calcutta, Dr. S. R. Bose of the college botanical laboratory reported in *Nature* March 12).

This mushroom antibiotic comes from the common edible mushroom, *Psalliota campestris,* readily available in Calcutta markets during the rainy season, Dr. Bose says. He discovered its anti-germ action in 1952. More recently, Miss Nancy Atkinson, bacteriologist at the University of Adelaide, South Australia, found an anti-germ chemical in another kind of mushroom. (See SNL, Oct. 30, 1954, p. 281.)

The Atkinson antibiotic came from a mushroom called *Psalliota xanthoderma,* which, Dr. Bose says, is also edible but is regarded as somewhat poisonous to some.

The campestris mushroom antibiotic has been given to typhoid patients both in the form of a crude extract by mouth and in the form of a concentrate for hypodermic injection into the muscles.

Science News Letter, March 26, 1955

MEDICINE

# Potent Synthetic Hormone

**New chemical for Addison's disease patients is up to 50 times more powerful than natural hormone. It can also help in diagnosing cancer of adrenal glands.**

▶ A SYNTHETIC hormone 10 to 50 times more active than the natural one produced by the body is giving a new lease on life to sufferers from Addison's disease.

One patient in the last stages of the disease and brought into the hospital in shock began to improve within a few hours after the first dose of the new hormone. Within 60 days he was able to work full time as a skilled laborer.

The new hormone is fluorohydrocortisone. It was synthesized by Drs. Josef Fried and Emily F. Sabo of the Squibb Institute, New Brunswick, N. J. Its success in treating Addison's disease was announced in Boston by Drs. George W. Thorn, Alan Goldfien, John C. Laidlow, Najib Abu Haydar and Albert E. Renold of Harvard Medical School and Peter Bent Brigham Hospital.

The synthetic hormone is also proving useful in diagnosing the degree of adrenal gland function. It can help determine whether, in symptoms of adrenal disease, the trouble is a cancer of the adrenal glands or overfunctioning of the pituitary gland in the head with resulting trouble in the adrenals.

Addison's disease is due to disease of the adrenal glands. These two small glands on top of the kidneys are best known today to the lay person as producers of anti-arthritis cortisone. Cortisone has been used for treatment of Addison's disease patients since it became available.

The Addison's disease patients, however, had the same side effects from cortisone as arthritis patients. These include high blood pressure, excessive hair growth, skin eruptions, confused mental state and tendency to diabetes.

Fluorohydrocortisone produces the same side effects. But this new synthetic hormone is so much more powerful than cortisone that patients are helped by very much smaller amounts. This means they can go on taking it longer than they can cortisone before the side effects become too troublesome.

The Harvard researchers were "frankly amazed" at the small amount of fluorohydrocortisone that kept the Addison's disease patients in correct adrenal gland balance.

Before cortisone and an earlier adrenal gland cortex extract were available, Addison's disease patients usually died within a few days or weeks or at most within three years. Restoring the hormone their failing glands no longer produce keeps them alive, though they must continue to take it as diabetics take insulin.

Bronzed skin, low blood pressure, prostration, anemia, diarrhea and digestive disturbances are characteristic symptoms of Addison's disease.

Reports of the patients treated by the Harvard doctors with fluorohydrocortisone appear in the *New England Journal of Medicine* (March 17).

Science News Letter, March 26, 1955

METEOROLOGY

## Tiny Rocket to Drop Ball From 75 Miles Up

▶ AN EIGHT-FOOT-TALL, needle-nosed rocket, designed to carry an aluminum ball 75 miles into the air, then drop it, has been developed.

Crammed with rugged instruments, the ball can collect upper atmospheric data and radio the information to the ground as it falls.

Two of the newly built 220-pound rockets will be tested at the National Advisory Committee for Aeronautics' proving ground at Wallop's Island, Va. Afterwards, similar rockets will carry the balls high over the Arctic as part of the 1957-58 International Geophysical Year research program.

The rockets, minus their propulsion units, were delivered to the Defense Department by University of Michigan engineers. The new design is expected to cut the cost of such studies from $100,000 to $15,000 a launching.

Booster units, such as are used in anti-aircraft missiles, will carry the small, sleek rockets to high altitudes. The rocket will travel the rest of the way on its own power. When it reaches the high point in its flight, the rocket's eight-inch hull will burst open to release the ball.

Science News Letter, March 26, 1955

AGRICULTURE

## More Grasshoppers And Fewer Crickets

▶ FARMERS CAN look forward to more grasshoppers, but fewer Mormon crickets this year.

The results of surveys made during the summer and fall of last year by state and federal entomologists indicate that the United States grasshopper population will be increased. Biggest threat to crops and rangelands during 1955 can be expected in Missouri, southern Wisconsin, the Texas Panhandle and eastern Kansas.

Indiana, Iowa, Nebraska, Minnesota, Oklahoma, Montana, North and South Dakota and Utah can also expect an increase in the number of grasshoppers to be fought. The U. S. Department of Agriculture states that some 6,000,000 acres of range in 15 Midwestern and western states alone may require control measures.

Mormon crickets, on the other hand, will be less populous this year. Agriculturists credited two years of aerial warfare with insecticides as being responsible for the reduced cricket threat.

Drought has increased grasshopper problems in much of the affected area, although in some parts of New Mexico and Texas it has been so dry that not even the grasshopper survived.

Winter and spring weather can alter the present picture, the scientists report.

Science News Letter, March 26, 1955

SCIENCE NEWS LETTER
VOL. 67 MARCH 26, 1955 NO. 13

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.



Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, ELdorado 5-5666, and 435 N. Michigan Ave., Chicago 11, SUperior 7-6048.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees — Nominated by the American Association for the Advancement of Science: Karl Lark-Horovitz, Purdue University; Kirtley F. Mather, Harvard University; Paul B. Sears, Yale University. Nominated by the National Academy of Sciences: Homer W. Smith, New York University; Edward U. Condon, Berkeley, Calif.; Harlow Shapley, Harvard College Observatory. Nominated by the National Research Council: Duane Roller, Los Angeles, Calif.; Ross G. Harrison, Yale University; Leonard Carmichael, Smithsonian Institution. Nominated by the Journalistic Profession: Neil H. Swanson, Baltimore, Md.; O. W. Riegel, Washington and Lee University; Michael A. Gorman, Flint Journal. Nominated by the Scripps Estate: Charles E. Scripps, Cincinnati, Ohio; Edward J. Meeman, Memphis Press-Scimitar; John T. O'Rourke, Washington Daily News.

Officers — President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff — Director: Watson Davis. Writers: Jane Stafford, Marjorie Van de Water, Ann Ewing, Howard Simons, Edward Housman. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. Interlingua Division in New York: Alexander Gode, Hugh E. Blair, 80 E. 11th St., GRamercy 3-5410.

GENERAL SCIENCE

# Tiny H-Bombs Like TNT

**"Bangless" H-bombs will probably make international control of nuclear weapons impossible, since nations can hide their progress.**

➤ "BANGLESS" H-BOMB tests, discussed by Foreign Secretary Sir Anthony Eden in the British Commons, seems to confirm speculation over several years that it may be possible to trigger or ignite a hydrogen or fusion bomb without exploding an A or fission bomb as a starting mechanism.

The original idea was that the extremely high heat of a uranium or plutonium bomb was necessary to trigger the H-bomb. Now some other devices, such as wires exploded by a jolt of high voltage electricity, may do the trick.

If this is the case, one might make a little H-bomb, much smaller than any A-bomb. The miniature H-bomb might be set off with no more excitement than a charge of TNT.

The fission bomb (of uranium 235 or plutonium) must have a minimum mass, probably about 50 pounds or so, in order to set itself off by an uncontrolled chain reaction.

The light elements of the H-bomb, probably deuterium, tritium or even lithium, possibly could be set going by high temperature. It would be limited in its explosion by the amount of fusionable material provided and this might be very little. It might be so little that it could be referred to as a H-bomb trigger test.

In another sense, it could be said that explosions are no longer necessary to H-bomb tests because the great secret is out. This is that the H-bomb can be exploded.

The greatest atomic secret was given the world when A-bombs were dropped in 1945 on Hiroshima and Nagasaki. Until a few weeks earlier when the first test at Alamagordo was successful, the scientists were not sure that their theory was correct. Similarly, the H-bomb explosions by the United States and Russia validated the theories of atomic fusion.

Now actual explosions can be foregone while scientists confident of their theory push ahead with developments and H-bomb production on both sides of the Iron Curtain. Great bangs that dirty the planet's atmosphere with radioactive debris, signaling atomic advances, may be used sparingly, hiding progress to competitive nations. Explosions have always been mere climaxes to atomic progress.

In the progress that seems apparent, the possibility of international control of atomic weapons through inspection seems to have faded completely. For the ingredients of the new bombs are too plentiful, too widely spread on the surface of the earth.

Little nations as well as big might be able to process them. Many more than three nations may hold the power of human murder in the future. The idea of no need for explosions may indeed be ominous.

Science News Letter, March 26, 1955

TECHNOLOGY

# May Can Fresh Milk

➤ HOUSEWIVES MAY soon be buying canned fresh milk that has been on the grocery shelf for weeks.

Bacteria-free whole milk, whose nutritional properties and flavor have not been changed, has been produced at the Illinois Institute of Technology in Chicago, it was reported by Dr. Harry E. Gunning, associate professor of chemistry.

Using mercury-in-gas resonance radiation, the Institute scientists have been able to reduce the bacterial count of whole raw milks to practically zero. In order to can or store whole milk, Dr. Gunning pointed out, it is necessary to kill the bacteria before they breed and turn the milk sour.

Although some flavor changes were found, in some of the experiments side-effects were practically eliminated.

The problems of flavor change and high costs have long plagued the experimenters who are trying to irradiate food for long-time freshness. Flavor changes in milk, for example, are produced when either ultraviolet light, atomic radiation, cathode ray machines or X-ray machines are used.

By using the simpler mercury-in-gas resonance radiation, which Dr. Gunning described as superior to ultraviolet sterilization, the flavor alterations are markedly reduced and the high costs cut. The only barrier needed to protect workers against the resonance radiation is plate glass.

Discovery that off-flavors caused by resonance could be eliminated by the proper pre-treatment of the milk was made by Prof. Milton E. Parker, director of the Institute's food technology department. In experiments with the mercury-in-gas radiation, the scientists killed 3,000,000,000 bacteria per cubic centimeter of milk.

"Storage of milk without changing flavor or quality," Dr. Gunning said, "could revolutionize marketing of milk to the armed forces, housewives and other consumers."

Science News Letter, March 26, 1955

*MISSILE WITH BRAIN — Size of the Falcon is compared to Air Force man. The deadly missile is six feet long and weighs 100 pounds.*

AERONAUTICS

## Six-Foot Air-to-Air Missile Has "Brain"

**See Front Cover**

➤ THE AIR Force has unveiled its newest guided missile, the Falcon, described as the "only air-to-air missile with a 'brain' of its own."

The trail of the projectile as it hunts down a drone is shown on the front cover of this week's SCIENCE NEWS LETTER.

The six-foot-long, 100-pound missile was designed to knock down enemy bombers carrying nuclear bombs before they reach the target. Falcons would be launched from jet fighters and once the target has been chosen the missile's electronic brain would control the course.

Built by Hughes Aircraft Co., the missile is expected to become a part of the regular armament of some Air Force interceptor units. The company said the Falcon's motors pack a thrust greater than some fighter jets and that tests indicate "every hit would be a kill."

The supersonic device has a range of from three to five miles and is launched automatically from the fighter. If the enemy bomber tries to maneuver out of the way, the missile will change course and follow it.

Science News Letter, March 26, 1955

*Farmers* today produce 38% more products on about the same amount of land farmed just before World War II.

Most of Asia's population, some 800,000,000 persons, derive about two-thirds of their daily calories from *rice*, mostly white rice.

AERONAUTICS

# Patent Norden Bombsight

➤ THE WORLD'S most famous bombsight, the Norden bombsight, was granted a government patent after being kept under security wraps for more than 32 years.

Considered the nation's No. 1 military secret during the early years of World War II, the bombsight was so jealously guarded that pilots forced down behind enemy lines were ordered to destroy the device even at a risk of their own lives.

The bombsight was originally invented by Carl L. Norden of New York in 1923, but was considered so ultra-secret that Mr. Norden remained "Mr. X," until November 1940 when Gen. George C. Marshall, then Army Chief of Staff, first called it the "Norden bombsight."

Application for a patent on the bombsight was not made until January 25, 1945, close to the end of the Second World War. It is more than 10 years later that Mr. Norden has received his patent, No. 2,703,932.

In describing his invention, Mr. Norden claimed that his bombsight provided for automatically reducing the errors a bombardier might make in adjusting the speed disc of old bombsights and the plane's altitude. He stated that this prevented making a bombing run during gliding or climbing.

The altitude limits of the Norden bombsight were set at 20,000 feet or more, which for World War II Flying Fortresses was a marked factor in flying above anti-aircraft fire.

In releasing the detailed drawings and explanation of the Norden bombsight, it is believed that the device has become outdated and has been superseded by more advanced sights suited to modern aircraft.

As a historic reminder of the pace at which weapons development has galloped since the end of World War II, plans for the once top-secret Norden bombsight, which Capt. Colin Kelly used to sink the Japanese battleship Haruna, can now be purchased for 25 cents at the U. S. Patent Office.

The patent rights to the bombsight were assigned by Mr. Norden to the United States of America as represented by the Secretary of the Navy.

Science News Letter, March 26, 1955

BOTANY

# Easter Lilies Year-Round

➤ EASTER LILIES are about to become available for the Fourth of July, Labor Day and Christmas too.

More than 40 varieties of new lily hybrids are now being tested and evaluated by scientists who developed them at the U. S. Department of Agriculture's plant industry station at Beltsville, Md. Described as being superior to the standard varieties now appearing in flower shops across the nation for the spring holiday, the plants will be available to the public within the next two to four years.

Products of several years of crossbreeding, improvements have been made on both the home plant variety and the larger plants for churches and hotels. The Easter potflowers are described as having bigger, finer blossoms and shorter stems, only 14 to 18 inches long.

For vase lilies, the bigger blossoms flower on stems from three to three and one-half feet long. Included in the new hybrids, too, are better lilies for floral pieces and funeral sprays.

The new plants, bred by researchers of both federal and state experiment stations, are the result of work with lily chromosomes, "inheritance vehicles found in the cells." By a series of intercrosses between diploids, plants with 24 chromosomes in each cell, and tetraploids, with 48 chromosomes in each cell, and then treatment with various growth regulating chemicals, the new hybrids were collected.

Some of the new plants are being increased for public release, but it is a time problem because increasing one bulb to hundreds of thousands is a slow process.

A report of the new varieties was made in *Agricultural Research* (March) by Drs. Samuel L. Emsweller and Neil W. Stuart who headed the project.

Science News Letter, March 26, 1955

PSYCHOLOGY

## Worry Rates With Poor Sight as Accident Cause

➤ WORRY, FEAR, stress and strain rate with poor eyesight as cause of motor vehicle accidents, the National Society for the Prevention of Blindness was told at its annual conference in New York.

Attention and perception are as important as eyesight itself for safe driving, Dr. Leon Brody, director of research at New York University's Center of Safety Education, New York, declared.

The effects of emotional upset or lack of attention on accurate perception and driving safety, Dr. Brody said, are shown by the fact that "most accidents happen to 'average drivers' rather than accident repeaters. And it is safe to say that these average drivers are for the most part persons with normal vision."

Science News Letter, March 26, 1955

## • RADIO

**Saturday, April 2, 1955, 5:00-5:15 p.m. EST**

**"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.**

**Dr. David B. Ast, director, bureau of dental health, New York State Department of Health, Albany, N. Y., will discuss "Fighting Tooth Decay."**

CHEMISTRY

## New Simple Sugar May Explain Growth Steps

➤ PRODUCTION OF a previously unknown sugar compound containing four atoms of carbon may shed additional light on how plants build sugars in photosynthesis.

The new sugar, erythro-3-pentulose, was found when spleen extract was reacted with ribose phosphate, one of the important growth chemicals. This research was carried on at the National Institutes of Health, Bethesda, Md., by Drs. Gilbert Ashwell and Jean Hickman of the Arthritis and Metabolic Diseases Institute.

The chemical structure of the new compound shows the way one complex sugar may be modified into another during plant growth. Theoretical schemes have been worked out which include compounds of the type now reported, but such compounds have not been discovered before in nature nor synthesized in the laboratory. Details of how the new compound was made and its composition proved are reported by the Bethesda scientists in the *Journal of the American Chemical Society* (Feb. 20).

Science News Letter, March 26, 1955

AERONAUTICS

## Airstrips Cheaper If Thinner at Edges

➤ BY MAKING civilian airstrips thinner around the edges than in the middle, more than $100,000 in construction costs per runway may be saved.

This is indicated by research by Robert Horonjeff and John Hugh Jones, engineers in the University of California's Institute of Transportation and Traffic Engineering.

At runways in Los Angeles, Oakland and San Francisco the two engineers set up detector instruments to determine how far planes landing and taking off were from the center of each airstrip. Day and night traffic and visual and instrument flight conditions were checked.

The results showed that 95% of traffic on a runway 150 to 200 feet wide is concentrated in the central 60 feet.

The engineers believe that 200-foot wide runways could be made 36 inches in the central 60 feet and 30 inches in the remaining 140 feet instead of a normally uniform 36-inch thickness. On a runway 8,000 feet long this would save as much as $103,000 and perhaps more in some areas.

Science News Letter, March 26, 1955

SOCIOLOGY

## Local Community Is Called Key to Crime

➤ THE LOCAL community can either be a breeding ground for criminals or a positive force in crime prevention, depending upon action or lack of action by its citizens.

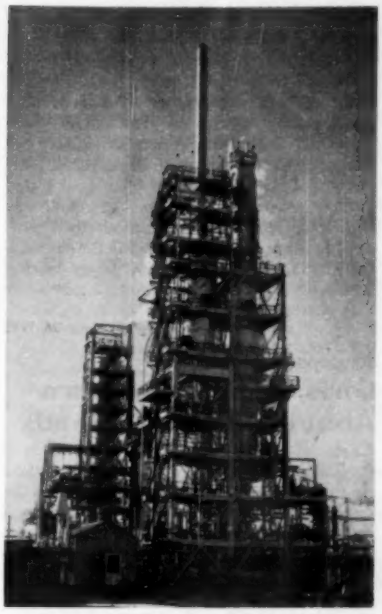
This is the theme of a new edition of "Principles of Criminology" (Lippincott) by two sociologists, the late Dr. Edwin H. Sutherland of Indiana University and Dr. Donald R. Cressey of the University of California at Los Angeles.

Long a standard work in the field of criminology, the book, now in its fifth edition, has been brought up to date by Dr. Cressey, who has made many contributions of his own to it.

The book also emphasizes the social antagonism which seems to mark all who have served time, a "nebulous something" that makes a man less desirable as a citizen than he was before he went in. It is the increasing awareness of such an effect that has led to development of prison group therapy in programs that are promising in criminal reformation.

As for TV, movies and comic books being an important factor in crime, the book points out that when a teen-age couple see a romantic picture they go out and make love. When they see a picture about crime and violence, they also go out and make love.

Science News Letter, March 26, 1955



*COKING TOWER—The world's first commercial petroleum coking refinery stands 196 feet high. It can convert residual oil to gasoline and burner fuels and at the same time produce finely divided coke.*

CHEMISTRY

## Heavy Oil to Produce Coke and Gasoline

➤ HEAVY OIL, a cheap waste product of petroleum refining, will be used to make coke and gasoline in a new process.

The world's first commercial refinery to apply the revolutionary "fluid coking" technique was dedicated at Billings, Mont., by the Carter Oil Co.

In the process, heavy oil is mixed with finely divided coke particles in the plant's 196-foot refining unit. The coke particles grow when the tank is heated and at the same time light oil fractions boil off. These gases will be refined to gasoline and home fuels.

Part of the coke will be burned to heat the unit.

Produced at a rate of about 1,500,000 barrels a day in the United States, the heavy oil for the process is primarily a factory fuel.

Petroleum coke is not only a fuel, but is used to make anodes for aluminum manufacture, electrodes, calcium carbide and abrasives.

Science News Letter, March 26, 1955

MEDICINE

## Cold, Distemper Viruses May Be Close Relatives

➤ THE VIRUS or viruses that cause the common cold may be close relatives of the dog distemper virus, research by Dr. John Adams, professor of pediatrics at the University of California at Los Angeles Medical Center, suggested. The research has has been supported in part by the U. S. Public Health Service.

Several years ago a new form of epidemic respiratory disease was noted in infants. The pattern of the disease varied in severity from sneezing and a mild cough to extreme breathing difficulty and death from pneumonia.

An examination of tissue from infants who died of the infection revealed changes very similar to those in tissue from dogs that died of distemper.

Dr. Adams has been able to neutralize distemper viruses with human sera in living chick embryos and in young ferrets. This suggests that respiratory infections in the humans from which the sera were obtained had created antibodies which would kill or neutralize distemper viruses. Antibodies are usually specific to given agents.

Distemper, the commonest respiratory disease of dogs, is caused by a known virus. Many human respiratory diseases, including the common cold, are thought to be caused by a virus or viruses. The identification of the actual human virus is under intensive study in tissue culture.

"We may find that distemper and the common cold stem from the same family of viruses," Dr. Adams said.

Science News Letter, March 26, 1955

PSYCHIATRY

# "Screening In" Important

➤ PSYCHIATRIC SCREENING out of unsuitable men from the armed services either at induction or early in training has proved successful in cutting down the numbers later given psychiatric discharges.

But as the manpower needs of the country have become more demanding, the reverse process of "screening in" has become increasingly important. At the same time it is more difficult, points out Dr. William A. Hunt, Northwestern University psychologist, formerly of the neuro-psychiatry branch of the U. S. Navy's medical department.

It is easy, Dr. Hunt points out, to predict disaster in the armed services for the low grade mental defective, frank psychotic and chronic severe psychoneurotic. A prediction cannot as easily be made for the borderline mental defective, the mild neurotic and the marginal behavior problem.

Yet if all these last were to be automatically eliminated on suspicion of future failure, many potentially successful recruits would be lost to the services.

The process of screening in, Dr. Hunt explains, involves the early detection of these marginally serviceable men and their selection for trial duty, supportive therapy, selective placement and other measures to help them adjust and make good in military service. It is important to spot such men early in their service so that they may be helped.

Experience in the Navy indicates that some day the doctors need not content themselves with screening out the mentally ill; they may be able to pick the man who is in good mental health.

In the past, psychiatric selection has been a negative process. The doctor spotted those who were mentally ill or abnormal. If he could find nothing wrong with a man, that man was called "normal." In studies described by Dr. Hunt, the experiment was tried of having the doctor spot the normal men instead of the mentally ill. Normal men picked in this way were then compared with the "normals" left over when the unfit were screened out. The positively picked group had a lower rate of later maladjustment than the "negative normals."

"It looks," comments Dr. Hunt, "as though clinicians might be able to at least make a start toward identifying positive mental health, if forced to do so."

Dr. Hunt's report will appear in a forthcoming issue of *American Psychologist*.

Science News Letter, March 26, 1955

American housewives open an estimated 30,000,000 *tin cans* a day.

AERONAUTICS

## Plane's Swirling Trail Lasts More Than Minute

➤ AS IT cuts through the air, a plane leaves a trail of air whirlpools that swirl at approximately the same speed for as long as 35 seconds and are still active after a minute. Traveling eight-tenths the speed of sound, a plane would leave a one-minute trail of turbulence extending 10.4 miles at 10,000 feet.

Such vortices of air have proved dangerous to craft that enter them and trouble is sometimes encountered when one plane follows another in a bombing attack.

The turbulence would also presumably cause a missile approaching from the rear to go off course. These air whirlpools are not caused by either the propeller backwash or jet stream, but by the action of the plane's wings, experiments by the National Advisory Committee for Aeronautics indicate.

In the tests, reported by Christopher C. Kraft Jr., a small propeller-driven plane flying at about 150 miles an hour set up smoke-marked vortices. A jet flew at right angles into the charted revolving air. Instruments noted deviations from the true course. The power of the trail was measured only for intervals up to 60 seconds, but it was assumed that the swirling power would continue to dissipate slowly.

In another experiment, one jet followed behind another. The second pilot reported that it was like flying in severe turbulence and that rolling motions were largely uncontrollable.

The researcher pointed out that comparatively small planes were used in the tests and he would expect more powerful swirling in the trail of a bomber.

Science News Letter, March 26, 1955

PSYCHOLOGY

## Tracing Letters Helps Failures in Reading

➤ CHILDREN WHO have extreme difficulty in learning to read may learn better with the aid of finger movements than they do by the usual visual methods.

This is suggested in research at the University of California at Los Angeles by Drs. Richard Roberts and James Coleman of the psychology department.

An experimental group of reading failures was compared with a group of normal readers in learning "nonsense syllables" by visual presentation alone and with a combination of looking at and tracing the letters. The two groups were matched as to age and sex, and members of both groups were of normal or better intelligence.

The reading failures were found to be significantly inferior to normal readers in visual perception. When tracing words with a finger was added to just looking at them, the reading failures learned the "nonsense syllables" much faster. Normal readers did not improve with the addition of the kinesthetic method.

These findings lend support to the theory of the late Dr. Grace Fernald, former U.C.L.A. psychologist, who believed that most reading failures are deficient in visual perception and are primarily kinesthetic learners. Although these children initially learn best kinesthetically, their visual perception eventually develops so that they then learn readily by visual methods.

The researchers recommended that educational systems incorporate finger tracing methods for those children who learn better that way.

Science News Letter, March 26, 1955

SOCIOLOGY

## Girls, Like Boys, Learn About Sex From Friends

➤ GIRLS, LIKE their brothers, get their first information on sex from friends of the same sex and not from parents, ministers or classroom instruction.

This fact was disclosed by a study made of 67 girls enrolled in a course on human growth and development at the University of Oklahoma. The study was conducted by Drs. Henry Angelino and Edmund V. Mech of the College of Education.

Next to girl friends, printed matter was the most common source of first sex instruction. Mother tells her daughter about menstruation and some of the other "facts of life." Father was mentioned by only two girls as providing instruction. School courses are a very rare source.

The girls did not blame their girl friends for giving them misinformation; it was the lack of information that troubled them. One girl commented:

"I had many misconceptions. I don't think anyone ever gave me the wrong ideas, but I was pretty vague on what they didn't tell me."

At least one girl urged that sex education be given in junior high school—and should be required.

Details of the study are reported in the *Journal of Psychology* (April).

Science News Letter, March 26, 1955

CHEMISTRY

## Zinc Binds Vitamin to Enzyme for Alcohol Use

➤ DISCOVERY THAT the metal, zinc, binds the pellagra-preventing vitamin to an enzyme chemical is announced by Drs. Bert L. Vallee and Frederic L. Hoch of Harvard Medical School in Boston.

With the zinc "bridge," the vitamin and the enzyme, called alcohol dehydrogenase, form a complex essential to the metabolism and production of alcohols.

The alcohol dehydrogenase is found in yeast and in liver. It functions only in the presence of a co-enzyme which contains the vitamin, nicatinamide. The co-enzyme is called DPN, short for diphosphopyridine nucleotide.

Science News Letter, March 26, 1955

# IN SCIEN

ANTHROPOLOGY

## Sherlock Knew Bones In Spite of Boners

➤ SHERLOCK HOLMES, famous detective of fiction, displayed a very good knowledge of physical anthropology, Dr. Wilton Marion Krogman, professor of physical anthropology in the graduate school of medicine at the University of Pennsylvania, concludes on the basis of careful analysis of A. Conan Doyle's detective stories.

Although Holmes was guilty of some "boners" in his comments on bones, and was too much influenced by mistaken notions popular in his day, Dr. Krogman calls him "a most worthy colleague in anthropology."

Especially notable was Holmes' ability to estimate the height of a suspect from the length of his stride as shown by his footprints.

He also showed his knowledge of the physical characteristics of different peoples when he deduced correctly that certain diminutive footprints were those of an Andamanese because "the Hindoo proper has a long and narrow foot. The sandal-wearing Mohammedan has the great toe well separated from the others because the thong is commonly passed between."

Dr. Krogman's remarks on Sherlock Holmes as an anthropologist appear in *Scientific Monthly* (March).

Science News Letter, March 26, 1955

METEOROLOGY

## Highest Wind Measured At Close to 300 MPH

➤ THE HIGHEST wind ever reliably measured—close to 300 miles an hour—swept over Philadelphia at 20,000 feet last Jan. 23, meteorologists at the U. S. Weather Bureau now believe.

The strong wind was part of the jet stream, a 300-mile-wide river of rushing air whose meanderings girdle the globe at about 30,000 feet. Discovered by pilots in high-flying bombers during World War II, the jet stream is now known to have a day-to-day influence on weather at the earth's surface.

Winds of 75 miles an hour or more are "hurricane velocity" on the earth's surface. The high wind over Philadelphia was first reported as 392 miles an hour. Although some weathermen believe that such tremendous speeds can occur, measurements made over Philadelphia, now thoroughly analyzed, show the wind actually had the much lower velocity of close to 300 miles an hour. The exact figure is still being argued, however.

Science News Letter, March 26, 1955

# CE FIELDS

BOTANY

## Red Maple Trees Pace Spring North

➤ RED ROBINS are popularly the first signs of spring, but red maple trees offer man a natural timetable for determining how far and how fast spring is traveling north.

The red maple is one of the first trees to wear its new flower-patterned spring frock. Experts use it as a milestick for pacing spring weather northward because it is one of the few trees that grows from Florida to Quebec.

Spring weather travels up the coast at about 100 miles per week from early March through May, and with allowance for altitude, nearness to large bodies of water and location in cities, the red maple blossoms forth on schedule.

Usually the red maple leafs in February or early March in Florida, in early April in Virginia and Maryland and in early May in southern New York and northern Ohio. A difference of two weeks' growth can often be noted within a distance of 15 miles, mainly a direct effect of altitude. Tree experts report that 500 feet in elevation can cause an appreciable difference in climate.

Along the seashore, trees and shrubs will leaf earlier than inland, while those trees in the city will be ahead of their country cousins. Flowering of trees in the city is aided by reflected heat from buildings and streets. Near large bodies of water, the heat of the water helps to speed the growth process.

Science News Letter, March 26, 1955

MEDICINE

## West Coast Medical Center Opens Units

➤ THE FIRST major units of a $50,000,000 plant for teaching and research in the health sciences on University of California campuses has been dedicated at San Francisco.

The facilities are the 15-story, 500-bed Herbert C. Moffitt Hospital and the 14-story Medical Sciences Building, two key units in the post-war rejuvenation of the plant at the University's Medical Center in San Francisco. The projects represent $21,000,000 of a $26,000,000 expansion at San Francisco. Major units of a building program almost as large at U.C.L.A., the Los Angeles campus of the University, will go into operation later this year.

Both buildings are designed primarily for teaching and research. The two units are joined, and both clinical and research laboratories complement each other.

The hospital contains ten surgeries, four equipped with cables for originating closed-circuit television for teaching purposes. The radiology department includes a million volt X-ray machine. There is a rooming-in arrangement in the obstetrics ward. One floor, constructed with funds from the U. S. Public Health Service, is devoted entirely to cancer research. Another is occupied entirely by clinical laboratories. There are humidity and constant temperature rooms and other special facilities.

The medical sciences building houses the schools of medicine and nursing and the colleges of dentistry and pharmacy.

A second unit of the medical sciences building, with more extensive basic science laboratories, will be constructed following the demolition later this year of an old dental-pharmacy building constructed before the turn of the century.

The new plant will make the medical center the largest and most comprehensive on the West Coast.

Science News Letter, March 26, 1955

TECHNOLOGY

## First Industrial Research Reactor to Be Built

➤ THE FIRST nuclear reactor for industrial research will be built in Chicago by Armour Research Foundation of Illinois Institute of Technology after approval by the Atomic Energy Commission.

Industries are helping to finance the reactor and associated equipment, expected to cost half a million dollars. North American Aviation, Inc., will build the pile.

Fissionable material to fuel the pile will be obtained from the AEC on an extended loan basis. The reactor will be the "water boiler," using little more than two pounds of uranyl sulfate in water solution.

Research with the pile will not be competitive with military applications and will not fall under government security regulations. The reactor will not be used for research on reactors or for generating electrical power, but will produce short-lived radioisotopes useful in medical, industrial and scientific research.

Science News Letter, March 26, 1955

AGRICULTURE

## Vegetable Seeds Are Plentiful This Year

➤ VEGETABLE SEEDS for spring planting will be plentiful for the home gardener this year.

The seed supply is the most abundant in the last four years, report more than 100 commercial seed growers. The 1954 crop of 216,300,000 pounds marks a 10% increase over 1953.

Increases in the 1954 seed production available for 1955 planting were registered by cauliflower, winter squash, non-sweet corn, dwarf green beans, spinach, carrots, kale, onions and dwarf lima beans.

Science News Letter, March 26, 1955

AGRICULTURE

## Attack of Armyworm Causes $21,000,000 Loss

➤ ARMYWORMS MARCHED against the American farmer last year and ate their way through more than $21,000,000 worth of grain crops.

Reports from 27 states showed that the heaviest insect infestations were in the areas east of the Mississippi River. Destructive outbreaks of the armyworm were also reported as severe in several Midwestern, North Central and Western states. In Minnesota, for example, it was reported that the insects destroyed 3,500,000 bushels of barley, 7,250,000 bushels of oats, almost 1,000,000 bushels of wheat and more than 1,250,000 bushels of corn.

In answer to a survey questionnaire sent out by the U. S. Department of Agriculture's plant pest control branch, insect-control men in the states said that the weather during 1954 was the prime factor responsible for development of the armyworm attacks.

At the same time, weather, natural enemies and controls were credited for halting the outbreaks in many states. A concentrated counterattack against the armyworms with insecticides saved American agriculture an estimated loss of $60,000,000.

Science News Letter, March 26, 1955

MEDICINE

## 102 New Drugs Slated For U.S.P. This Year

➤ SO-CALLED MOLD remedies, or antibiotics, anti-histamines, hydrocortisone and a radioactive chemical used in diagnosis and treatment are among the 102 new drugs admitted to the U.S. Pharmacopeia, 15th revision, due this year.

The Pharmacopeia is a book which provides the standards for the most important medicines used in the United States and many Latin American countries.

Established in 1820, it is revised every five years by a national voluntary committee of medical and pharmaceutical experts. Its standards are enforced by the U.S. Food and Drug Administration and by many local health agencies.

Some of the 102 new drugs were unknown when the 14th revision of the Pharmacopeia went to press in 1950. Tetracycline is an example. Hydrocortisone, though known in 1950, was only a laboratory curiosity.

Making room for the more than 100 new drugs, 163 U.S.P. XIV articles were dropped, among them Digitalis Tincture. The former standard heart medicine has given way to digitoxin, its principal constituent and a more palatable drug for heart patients to take by mouth.

The standards for the new articles are expected to become effective between Nov. 1 and Dec. 31, 1955.

Science News Letter, March 26, 1955

ASTRONOMY

# Saturn Is Now On View

**The ringed planet appears low in southeastern sky in Libra, the scales. This year is 300th anniversary of discovery of the nature of the rings.**

By JAMES STOKLEY

➤ FOR THE first time in many months, the ringed planet Saturn finds a place on our accompanying maps of the evening skies, which show their appearance at about ten o'clock, your own kind of standard time at the first of April, nine o'clock on the 15th and eight on the 30th.

Saturn is seen low in the southeast in the constellation of Libra, the scales, just as it is rising into view. Later in the night, of course, it will be higher.

The brightest planet of the April evening, however, is Jupiter, which is high in the southwest, in Gemini, the twins, close to the stars Castor and Pollux. Jupiter is moving in an easterly direction and at the end of April is nearly in line with the two stars.

A third planet is also shown but it is not very conspicuous. This is Mars, low in the northwest in Taurus, the bull. Because it has now receded so far from us, it is quite faint, of the second magnitude. Moreover, because of its low altitude, its light is absorbed by the greater thickness of the earth's atmosphere through which is has to pass, compared with what it would have to penetrate if it were higher in the sky. This dims it still further.

Among the stars that are shown, the most brilliant is still Sirius, the familiar "dog star," in Canis Major, the larger dog, which is low in the southwest. It too, because of its lowness, shines with less apparent brightness than it did on winter evenings.

To the right of Canis Major is shown Orion, the warrior, with only the upper part visible, containing the bright star Betelgeuse. And farther right is Taurus in which Aldebaran, as well as Mars, can be seen.

Above Canis Major is Canis Minor, with Procyon, another first magnitude star.

Still higher we find Gemini, the twins, already mentioned in connection with Jupiter. Pollux is of the first magnitude, while Castor, a little fainter, is second magnitude.

These are constellations typical of the winter sky, but high in the south is one that is characteristic of spring evenings, Leo, the lion, in which Regulus stands. This star is at the end of the handle of a smaller group called the sickle.

Denebola, a second magnitude star to the left, in the same constellation, marks the lion's tail.

Next to Leo, to the left and a little lower, is Virgo, the virgin, with the star Spica. A little higher is Bootes, the bear-driver, with Arcturus. Part of this constellation extends over into the northern sky, and next to it is the great dipper, in Ursa Major, the larger bear.

In the bowl of the dipper are the two stars called the pointers, whose direction indicates the way to Polaris, the pole star, which is in Ursa Minor, the smaller bear, and at the end of the handle of the little dipper.

## Cassiopeia on Horizon

Below and to the left of Polaris stands Cassiopeia, the lady in the chair, near the horizon, and farther left is Perseus, the hero. Above him is Auriga, the charioteer, in which is the star Capella. And next to him we get to Taurus, and Gemini.

This year marks the 300th anniversary of the discovery of the true nature of the rings of Saturn, the planet which is now appearing late in the evening low in the southeast.

In the year 1610 Galileo first applied his little telescope to the heavens, and discovered the four largest moons of Jupiter. Then he turned it on Saturn, and saw what seemed to be two moons, or at least some sort of appendages, on each side of that planet. Two years later he looked again and they were gone, which puzzled him greatly.

In the meantime, however, he had wanted to get his discovery on record, so that no one else could get ahead of him, yet he wanted to hold back if possible, in case he was wrong.

## Cryptic Disclosure

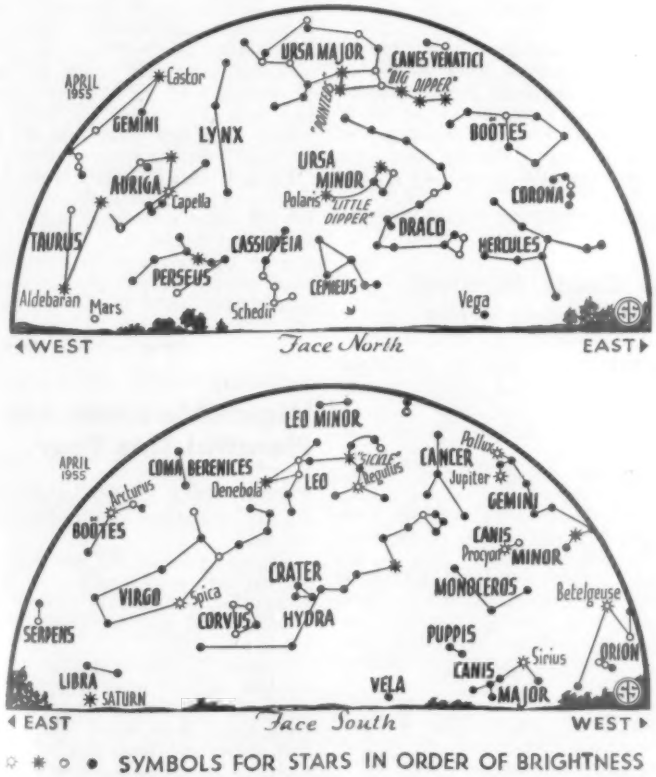
Accordingly, he resorted to what in those days was a common practice—he announced it as an anagram. In a letter to his friend Kepler, another great astronomer, he included the following jumble of letters:

"smaismrmilmepoetaleumi
bunenugttauiras."

Later he explained that if these were rearranged, they spelled out the Latin sentence:

*Altissimum planetam tergeminum observavi,*

which means "I have observed the most distant planet to be triple." Later, other



astronomers watched Saturn through larger telescopes, and the appendages were seen again; to some, they looked like handles on either side of the planet.

It was in 1655 that the Dutch astronomer, Christian Huygens, using one of the best telescopes that had yet been made, looked at Saturn and finally realized the nature of these handles. But he also was hesitant about making an announcement.

However, he also discovered a moon of Saturn, which he named Titan. In March of 1656 he wrote a letter telling about this, which his publisher, Adrian Vlacq of the Hague, printed in a book by Peter Borel on the history of the telescope.

And at the end of this letter was another meaningless jumble of letters:

"aaaaaaaccccccdeeeeeghiiiiiii
llllmmnnnnnnnnnnoooo
ppqrrsttttttuuuuu."

Four years later he decided that the time was ripe to make an explanation to the world, so he wrote a book called "The System of Saturn" also published by Vlacq.

In this he explained that the letters, rearranged, spelled out:

*Annulo cingitur, tenui, plano, nusquam cohaerente, ad eclipticam inclinato.*

In English this means: "It is surrounded by a ring, thin, flat, nowhere touching, inclined to the ecliptic." It would be difficult to give a more concise description. Thus the mystery was solved.

Now we know that the ring is not solid, but consists of a vast swarm of tiny moons, too small to be seen individually. The system is about 41,500 miles wide, and has an outside diameter of 171,000 miles, with a space of some 7,000 miles between the inner edge and the surface of the planet.

Yet, huge though they are, the rings are very thin, not more than ten miles in thickness. Saturn goes around the sun once in 29½ years, and twice in this period the edges are presented to us.

When this happens, because of their thinness, they are not visible from earth even with a big telescope, thus explaining the puzzling disappearance of the appendages observed by Galileo.

While these rings are now unique, as far as we know, they may not always be so. It is believed that they originated when another and larger moon of Saturn accidentally got so close to the planet that tidal forces pulled it to pieces.

Some of these fragments continued revolving around and thus formed the rings. There is a theory that, in the far distant future, our own moon may be drawn in closer than it is now, to suffer a similar fate.

No doubt many of the fragments would rain down on earth, destroying any life that may remain here at that remote epoch. Those left, if this theory is correct, will then form a second ring system, so the earth and Saturn will then both be ringed planets.

### Celestial Time Table for April

| April | EST | |
|---|---|---|
| 7 | 1:35 a.m. | Full moon. |
| 9 | 10:23 p.m. | Moon passes Saturn. |
| 11 | 9:00 a.m. | Moon farthest, distance 251,800 miles. |
| 15 | 6:00 a.m. | Moon in last quarter. |
| 17 | 11:00 a.m. | Neptune nearest to earth, distance 2,723,000,000 miles. |
| 20 | 12:20 a.m. | Moon passes Venus. |
| 21 | early a.m. | Meteors visible, radiating from constellation of Lyra. |
| 22 | 8:06 a.m. | New moon. |
| | 11:00 p.m. | Mercury on far side of sun. |
| 23 | 2:00 p.m. | Moon nearest, distance 223,500 miles. |
| 24 | 8:51 p.m. | Moon passes Mars (From Canada & northwest U.S. the moon will go in front of Mars, occulting it.) |
| 27 | 9:01 p.m. | Moon passes Jupiter. |
| 28 | 11:23 p.m. | Moon in first quarter. |

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, March 26, 1955

VETERINARY MEDICINE

# Love Helps Cat Diet

➤ FOR BETTER-FED pussycats, add to their diet a good dash of personal attention and a heaping tablespoonful of affection.

This is the advice of Drs. James B. Allison and John R. McCoy of the Rutgers University bureau of biological research, New Brunswick, N. J. The animal specialists are studying the basic nutritional needs of cats.

It seems that the 20,000,000 plus cats kept as pets in non-farm homes consume tons of prepared food daily, most of it horse meat. But whereas the cat population is increasing, the horse population is decreasing and pussycat nutritionists are trying to find a suitable substitute.

In their quest for a new kitty diet, the New Jersey nutritionists discovered that pussycats are individualistic and demand regularly administered portions of affection and attention. Drs. Allison and McCoy point out, however, that cats, like humans, cannot live on love alone.

The extra effort in petting and fondling before mealtime is merely good cat psychology, the scientists say, and helps the diet study. The kittens are being fed a semi-synthetic diet carefully tailored to the best nutritional requirements and the affection and attention helps in getting the cats to eat their meals regularly.

From the cat diet studies, the Rutgers scientists hope to develop the basic information upon which veterinarians and animal nutritionists can scientifically make better diets for pussycats. They also think that the study will aid zoo-keepers in concocting better diets for lions, tigers and other prize animals, but make no mention of the need for petting and fondling these bigger pussycats before mealtime.

Science News Letter, March 26, 1955

AGRICULTURE

# Can Prevent Dustbowls

**Get-rich-quick attitude and the inexperience of some farmers is blamed for dried-up areas in southern Great Plains. Technical assistance and education can overcome problem.**

➤ THE WEATHER is not the sole cause of the present "dustbowl" conditions gathering in the southern Great Plains. Ignorance, greed and inexperience share the greater burden of guilt.

Get-rich-quick wheat speculators, inexperienced farmers and old-timers who refuse to practice soil conservation methods have contributed to keeping an historically bad situation bad.

Soil conservation experts state emphatically that there is very little they can do to control the amount of rainfall or wind that plagues the Plains landowners. But, they insist, wise use of the land and good farming practices can be applied to prevent "dustbowls."

"Recurring drought," the U. S. Soil Conservation Service has reported, "is a normal feature of the southern Great Plains, an area of about 200,000 square miles in eastern Colorado, western Kansas, eastern New Mexico, western Oklahoma and western Texas."

"Extended droughts, interspersed with wet periods, have been coming to this region ever since it was settled. Reliable information indicates that droughts have been a common feature of the region for centuries."

After each prolonged drought, of which there have been four since the area was settled in the 1880's, the wet periods that followed brought new settlers. Encouraged by the rainfall, these new farmers took up the same old farming techniques which proved inadequate in the past.

In addition, whenever wheat prices went up, such as during the two World Wars, speculators did absentee farming, hoping for a rich profit and not caring about the land.

To add to the poor land saving methods, much of the new land plowed under during wet and wealthy periods is classed as poor land for crops.

During the high price times of 1941-1950, the Service pointed out, "about 4,000,000 acres of sodland were plowed up for wheat or cotton. At least 75% of this newly plowed land is unfit for cultivation. It will produce profitable crops only during years of above normal rainfall. It is highly susceptible to wind erosion in years of below normal rainfall."

To cope with the problems of erosion and dust storms, thousands of farmers in the area today have applied soil conservation practices. They have left a protective stubble on their land as long as possible to hold the soil in place. They have limited the winter grazing of their cattle. They have not cultivated poor lands.

In general, they have been satisfied to make a small profit during the dry years and gravy during the wet years, rather than try and bleed the land in a get-rich-quick program.

But then, too, many have watched their land blow or be covered over because their neighbors were careless.

The Soil Conservation experts at all levels agree that they can lick the problem, without resorting to a regimented land use program forcing farmers to follow good conservation practices. They believe that technical assistance, education and continued research can save the land and prevent dustbowls.

Science News Letter, March 26, 1955



CHEMISTRY

## New Device Measures Length of Molecules

➤ THE LENGTH of giant elongated molecules, such as those found in certain viruses, can be accurately measured by a new device.

Developed by Dr. John Rowen and Reginald Dickinson, of the University of California at Los Angeles' Atomic Energy Project, the device is an improved model of the streaming birefringence apparatus.

A tiny beam of polarized light is sent through a mechanism that spins the molecules at speeds ranging from one revolution per minute to thousands per minute. The direction of rotation can be reversed almost instantaneously.

As the speed of rotation is increased the molecules tend to line up like logs in a stream. The angles that the molecules assume in the process of lining up can be measured with the aid of the polarized light.

From these data the length of the molecule can be computed with a high degree of accuracy.

The new device has several advantages over existing birefringence apparatuses. Its larger range of constant speeds and other design factors permit a greater precision of measurements. It is also a mobile unit. Previous models have been designed for a fixed installation.

The device has been used to study the tobacco mosaic virus which is a large rod-like particle, the desoxyribonucleic acid of genes, and the thread-like molecule of hyaluronic acid. Because its measurements depend upon angular relationships the apparatus cannot be used to study spherical molecules.

Science News Letter, March 26, 1955

MEDICINE

# Artificial Eyes Twinkle

➤ MOVING, TWINKLING artificial eyes are now available to veterans who have lost an eye through injury or disease.

The natural-looking movements and the twinkle are done with magnets. One magnet is in a clear, non-irritating plastic which is implanted within the eye socket and attached to the muscles that formerly moved the real eye which was lost. The other magnet is set into the artificial eye to match the magnet of the implant.

More than 150 New England veterans now are wearing the "magnetic eye." It was designed by Dr. Everett H. Tomb, chief of the eye, ear, nose and throat section, and Dr. Donald F. Gearhart, D.D.S., chief of the plastic eye and restorations clinic at the Boston Veterans Administration hospital.

The magnets are so aligned that the artificial eye cannot slip out of correct, normal position. They provide excellent anchorage for the eye which relieves the eyelids from carrying the weight of the artificial eye.

The movement muscles of the removed eye, when attached to the implant, cause it move in the same directions and at the same time as the living eye. Likewise, the artificial eye's magnet, by following the magnet of the implant, causes the artificial eye to move in the same direction at the same time as the living eye.

Besides the better appearance, problems of hygiene can be reduced with the "magnetic eye."

Notably good results have been accomlished by installing the magnetic implant in veterans who previously had older types of artificial eyes.

The VA doctors feel that veterans with difficult eye problems caused by disease or eye injury can now look for more complete rehabilitation.

Veterans outside the New England area will be able to get these eyes as soon as the pilot plant project can be expanded. How soon they may be available for non-veterans is not yet known.

Science News Letter, March 26, 1955

# • Books of the Week •

**For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.**

ACETYLENIC COMPOUNDS IN ORGANIC SYNTHESIS—R. A. Raphael — *Academic,* 219 p., $6.20. A critical, practical approach to the subject for organic chemists, especially those engaged in synthetic operations.

BEES ARE MY BUSINESS—Harry J. Whitcombe and John Scott Douglas—*Putnam's,* 245 p., illus., $3.75. Enthusiasts describe beekeeping.

CARNEGIE INSTITUTION OF WASHINGTON YEAR BOOK No. 53—Vannevar Bush, President—*Carnegie Institution,* 311 p., illus., paper $1.00, cloth $1.50. Reporting researches of the year in the fields of astronomy, geophysics, terrestrial magnetism, biology and archaeology.

CELLS AND SOCIETIES—John Tyler Bonner—*Princeton University Press,* 234 p., illus., $4.50. Groupings of creatures from amebas to men have the same biological necessities — food, reproduction, and holding the group together.

CHEMISORPTION—B. M. W. Trapnell — *Academic,* 265 p., illus., $6.80. Written to fill a gap in existing literature.

CHEMISTRY OF THE SOIL—Firman E. Bear, Ed.—*Reinhold,* 373 p., illus., $8.75. Useful data for soil scientists, biochemists and others concerned with the ground under our feet.

THE CITY FIGHTS BACK: A Nation-wide Survey of What Cities Are Doing to Keep Pace With Traffic, Zoning, Shifting Population, Smoke, Smog and Other Problems —Narrated and edited by Hal Burton from material developed by the Central Business District Council of the Urban Land Institute—*Citadel,* 318 p., illus., $5.00. Optimism is expressed for the future of the city.

COLLEGE AND UNIVERSITY PROGRAMS FOR THE PREPARATION OF TEACHERS OF EXCEPTIONAL CHILDREN—Romaine P. Mackie and Lloyd M. Dunn — *Govt. Printing Office,* Office of Education Bulletin 1954, No. 13, 91 p., illus., paper, 35 cents. It is estimated that not more than a fourth of the nation's handicapped and gifted children are receiving the special help they need, chiefly because of lack of qualified teachers.

THE DANCING BEES: An Account of the Life and Senses of the Honey Bee—Karl Von Frisch translated by Dora Ilse—*Harcourt, Brace,* 183 p., illus., $4.00. A book for the amateur nature lover with the facts unembroidered by the author's imagination.

THE ELEMENTS OF CHROMATOGRAPHY—Trevor Illtyd Williams — *Philosophical Library,* 90 p., illus., $3.75. For university students and research workers.

THE EXPLORATION OF THE MOON — Arthur C. Clarke — *Harper,* 112 p., illus., $2.50. Describing, step by step, the conquest of space with drawings by R. A. Smith that make it seem believable. The author is former chairman of the British Interplanetary Society.

HOME MUSIC SYSTEMS: How to Build and Enjoy Them—Edward Tatnall Canby—*Harper,* rev. ed., 302 p., illus., $3.95. To help the reader gain a grasp of an engrossing hobby.

INTRODUCTION TO PHYSICAL GEOLOGY—Chester R. Longwell and Richard Foster Flint—*Wiley,* 432 p., illus., $4.95. This college textbook was planned after consultation with experienced teachers of geology; a central theme is the cycle of erosion, sedimentation, and uplift of lands.

LINEARIZED THEORY OF STEADY HIGH-SPEED FLOW — G. N. Ward — *Cambridge University Press,* 243 p., illus., $6.00. One of a series of monographs on mechanics and applied mathematics.

MAN MEETS DOG—Konrad Z. Lorenz translated by Marjorie Kerr Wilson — *Houghton Mifflin,* 211 p., illus., $3.00. A book by a dog lover for other dog lovers.

A MANUAL FOR TRAINING THE DISABLED HOMEMAKER—Howard A. Rusk and others—*Institute of Physical Medicine & Rehabilitation,* Rehabilitation Monograph VIII, 167 p., illus., paper, $2.00. Healthy housewives can also find much of interest in these suggestions for saving energy, reaching and bending while doing the chores in a house.

PILOTS' WEATHER HANDBOOK—J. T. Lee and Carl M. Reber — *Govt. Printing Office,* CAA Technical Manual No. 104, 143 p., illus., paper, $1.25. What the airplane pilot needs to know about weather and its reporting. Includes a chapter on Sailplane Weather.

SUCCESSFUL MARRIAGE: A Modern Guide to Love, Sex, and Family Life—Morris Fishbein and Ernest W. Burgess, Eds. — *Doubleday,* rev. ed., 545 p., illus., $7.50. Thirty-four out of every 100 marriages end in divorce, one of the authors points out. This book was planned to aid in salvaging some of those marriages.

THE SWANS OF WILLOW POND—Olive L. Earle —*Morrow,* 64 p., illus., $2.00. A story for young children of the birth and growth of a swan family.

UNDER THE SEA-WIND: A Naturalist's Picture of Ocean Life—Rachel L. Carson—*New American Library,* 157 p., illus., paper, 35 cents plus 5 cents postage. Reprint of a book originally published by Oxford University Press in 1941.

**Science News Letter, March 26, 1955**

PUBLIC HEALTH

## Can Calculate Smoke Down-Wash From Stacks

➤ ARCHITECTS CAN now calculate whether the smoke from proposed factories will dissipate in the atmosphere or come pouring down on nearby residents.

The behavior of gases from plant chimneys, generally recognized as a major cause of smog, was studied in wind-tunnel experiments at the University of Michigan by Prof. R. H. Sherlock and E. J. Lesher. Operating factories were also studied.

Under favorable conditions, for instance with light wind and high stack-gas velocity, smoke rises as it moves downwind and gradually disperses in the atmosphere until the concentration is negligible, the scientists found. On the other hand, with strong winds and low stack-gas velocity, the gases may be forced downward relatively close to the plant.

A method was described to compute the necessary height and velocity for chimneys under the weather conditions of a proposed plant site so that down-wash can be practically eliminated. The calculated gas patterns are related to the "basic plume" developed in the wind tunnel.

Under unstable wind and atmospheric conditions, the gases loop, meander, vary in height, and may increase altitude when moving over a hill, the two Michigan scientists said in *Transactions of the American Society of Mechanical Engineers* (Jan.).

**Science News Letter, March 26, 1955**

PSYCHOLOGY

## Predicting Suicide of Patients Not Practical

➤ IT JUST is not practical to try to predict which mental patients are going to commit suicide so as to give them special preventive care.

This is the conclusion of Dr. Albert Rosen of the Veterans Administration Hospital in Minneapolis, Minn.

Dr. Rosen tried to construct a test that would make such a prediction. He made it up from questions for which the responses given by patients who later killed themselves were different from those of non-suicidal patients.

This test, he found, could have been used to predict 30 out of 40 later suicides. That sounds good. But the drawback is that it also mis-classified as suicidal 2,990 patients out of the 11,960 who did not kill themselves.

It is not sensible, Dr. Rosen points out, to treat all these nearly 3,000 patients as though they were suicidal in order to try to prevent suicide in the case of the 30 correctly diagnosed patients.

The same difficulty was encountered in the case of the doctor's clinical judgment.

Reason why it is so difficult to predict which patient is going to take his own life, Dr. Rosen explains, is because the suicide of a mental patient is really such a very rare occurrence. Only about 42 mental hospital patients per 100,000 kill themselves. This compares with about 11 per 100,000 in the general population.

Of the very severely depressed patients and those who threaten to kill themselves, only a very few actually take their own lives.

**Science News Letter, March 26, 1955**

GEOPHYSICS

# To Study Earth's Heat

**Scientists seek answer to why the Earth has warmed up 2.2 degrees during the past 50 years. Man himself may be cause of climate change.**

➤ WHY THE world is warming up is an unsolved mystery that scientists will attack during the world-wide probe of the earth, its seas and skies, to be made during the International Geophysical Year in 1957-58.

The cause of this warming, which amounts to 2.2 degrees Fahrenheit in the last 50 years, is not known. But what is happening to the ice in the Antarctic holds the clue as to whether temperature increases are world-wide or limited to the Northern Hemisphere.

If this vast continent, the world's biggest icebox, is defrosting inland as it is near the coast, then scientists will know the warm-up covers the entire world. If higher temperatures for the world continue, economic and political effects of great magnitude would be expected.

Not only thermometer readings but receding glaciers indicate the warm-up. A slight change in the amount of carbon dioxide in the atmosphere could have caused this change, many meteorologists believe.

Carbon dioxide comes into the air with the breath of animals and man, with the decay of organic matter, from volcanoes and from burning fuels. It is taken out of the air by plants and by the weathering of rocks and metals.

Although carbon dioxide makes up only a few hundredths of one percent of the atmosphere, it has been calculated that half again as much as is now present would raise the surface temperature of the earth two degrees.

By burning up about 100 billion tons of coal and oil since 1900, man himself may be changing the climate, since carbon dioxide and water vapor above the earth's surface act like a greenhouse, trapping heat.

This is one theory of why the earth is warming up.

Retreat of the Arctic ice pack also indicates that temperatures are increasing. No one knows, however, how much ice is in the Antarctic, and whether it is also melting on a gigantic scale. Estimates of Antarctic ice amounts range from 6,000,000 to 12,000,000 cubic miles. If only one percent of this ice shelf should melt, the sea level around the world would rise from eight to 30 inches.

Slow-growing lichens found next to the ice at the foot of glaciers in Queen Maud Land in the Antarctic indicate that there has not been a recession there in many years. But a thorough study of the whole continent, still mostly unexplored, will be needed to determine if this is true for the entire 5,500,000 square miles.

Such a study is planned for the International Geophysical Year, a cooperative effort of more than 38 nations to make the most comprehensive study ever undertaken of the earth.



GEOLOGY

## Discover Hot Spot On Pacific Floor

➤ THE EARTH'S inner fires make the Pacific Ocean floor off the west coasts of Central and South America hotter than any place yet known.

This discovery was made by the University of California's Scripps Institution of Oceanography. The earth's crust varies in thickness from four miles beneath the Pacific to 20 miles beneath the adjacent continents. It is warmed by heat rising from the molten core.

Despite the uneven thickness, most measurements of the amount of heat flowing through the outer crust give the same values for continents and oceans. Now readings taken on the Albatross Rise, a vast undersea plateau of the eastern tropical Pacific Ocean, show the heat flow there is three times that of the average oceanic or continental value.

The actual amount of heat from the core warming a small area of the crust is so minute it would not be perceptible to human touch.

Arthur E. Maxwell, a geophysicist at Scripps Institution at La Jolla, Calif., who was in charge of the heat-flow measurements, obtained from bottom sediment in the Acapulco Trench the deepest heat reading yet made. The value there is about one-half that of the average oceanic value, although measurements on either side of the trench approached average.

Mr. Maxwell believes that this may indicate a giant convection cell in the earth's crust.



GENERAL SCIENCE

## Honey Kept Fresh By Ultrasonic Waves

➤ HONEY CAN now be kept from spoiling by subjecting it to ultrasonic waves.

Crystallization, the first step in honey deterioration, is prevented by ultrasonic waves, Dr. Socrates A. Kaloyereas of Louisiana State University's agricultural experiment station, Baton Rouge, La., reported.

It was found that ultrasonically treated honey, stored from one to four weeks at temperatures ranging from 40 degrees below zero Fahrenheit to 102 degrees Fahrenheit, showed no signs of crystallizing. Untreated control samples, on the other hand, did show signs of spoiling.

"These results," the Louisiana scientist stated in *Science* (March 4), "are not only important from the practical standpoint of preserving honey, but they also have theoretical significance in view of the fact that treatment with ultrasonic waves has hitherto been supposed to promote crystallization in general."

In addition to keeping the honey fresh, ultrasonic waves also improve its taste, giving it a slightly tart flavor, which Dr. Kaloyereas describes as "superior" to untreated honey.

The experiments also showed that yeast cell growth is retarded by the ultrasonic wave treatment.

Further experiments are being conducted to study the chemical effects caused in honey by the action of the ultrasonic waves.



AERONAUTICS

## Wing Flap Scheme Tested For Vertical Take-Off

➤ A NEW type of experimental wing flap that would allow vertical take-off for conventional looking planes has been tested by the National Advisory Committee for Aeronautics at Langley Air Force Base, Va.

In the new scheme, fast moving, triple-bladed propellers with a somewhat larger than usual diameter are mounted on the wings in conventional position. They thrust back high velocity winds that are deflected downward by movable wing flaps to achieve the lift.

Once the plane is in the air the flaps could be set in horizontal position for normal flight. A report on the flaps stated that the laboratory experiments were designed only to test vertical take-off. No provision was made for forward flight.

The tests showed that the propeller backwash would be deflected 67 degrees downward with the system. The scientists pointed out that it is not necessary to bend the winds a full 90 degrees. The nose of the plane could be tilted upward at take-off.

Results of the experiments were reported by Richard E. Kuhn and John W. Draper, NACA scientists.

BOTANY

## NATURE RAMBLINGS

### The Living Fossil

➤ VISITORS TO Washington, D. C., are always much impressed with the beauty of the avenues of ginkgo trees that line the approaches to the Department of Agriculture and that ornament the city in many other places.

There is no good reason why Washington should be the only city in the country especially favored with this famous tree, sacred to the Chinese and Japanese and grown for centuries in their temple courts. It does very well in all parts of the United States where the winters are not too severe and can at least survive as far northwest as central Iowa.

The ginkgo tree can also stand a good deal of city smoke and dust. There are a lot of young ginkgos growing in Battery Park, New York. China is the native home of the ginkgo tree, although it has been much disputed of late whether there are any more really wild trees left in that country, because the species has been cultivated so long.

Of the several genera and fairly numerous species in the once widespread ginkgo family, only one species, known botanically as *Ginkgo biloba*, is living today. It would probably have perished centuries ago, too, but for the fact that Chinese priests fostered it in their temple grounds. It has now become fairly well distributed as a street and park tree in the United States, although it is still not as generally appreciated as it deserves to be.

A ginkgo tree has a somewhat columnar shape when young, becoming bushier as it reaches full size. Its glossy green leaves are wedge-shaped, usually deeply cleft. They turn a beautiful pale-gold hue in early autumn.

A great virtue of the ginkgo is the almost complete freedom from the fungus disease and insect pests that bedevil practically all of our other ornamental trees. Perhaps the last thing that ever wanted to chew its leaves was a herbivorous dinosaur.

There are fossil ginkgo leaves and twigs in American rocks, proving that the present importations are not a premiere, but a return engagement for this familiar handsome tree.

Science News Letter, March 26, 1955

MEDICINE

# Molecule Affects Sight

➤ CERTAIN TYPES of blindness may be related to a large, thread-like molecule which helps trap water in the vitreous humor, the jelly-like component of the eye.

This is suggested in research at the Medical Center of the University of California at Los Angeles by Drs. Robert Brunish and John Rowen of the physiological chemistry department and the Atomic Energy Project. The research is being supported by the Estelle Doheny Eye Foundation.

The molecule is that of a hyaluronic acid which is found in the vitreous humor and in connective tissue.

The vitreous humor helps hold the retina, or visual sense cells, in place. In old age and following cataract removal, the peripheral vitreous tends to liquefy, allowing the more central part to contract. This condition may lead to blindness.

This jelly-like mass is 99% water. This remaining one percent is hyaluronic acid, certain proteins and simpler compounds such as salts and sugars.

The study by Drs. Brunish and Rowen has shown that certain salts cause the hyaluronic acid molecule to contract to one-half its length. This suggests that the molecule's response to changing salt and acid concentrations may play an important part in regulating the volume of the vitreous humor by modifying the amount of water which these molecules bind.

An understanding of this mechanism may be important in explaining normal and abnormal eye conditions.

Science News Letter, March 26, 1955

ASTRONOMY

## Discover Nova In Southern Sky

➤ A NOVA has been discovered in the southern sky by Guillermo Haro of the National Astrophysical Observatory, Tonanzintla, Mexico.

The new star was already past its greatest light output when Dr. Haro spotted it on Feb. 16. Its magnitude then was 11, too faint to be seen without a telescope. The nova is in the constellation of Sagittarius, the archer, which lies in the direction of the center of the Milky Way galaxy to which the sun and its planets belong.

News of the nova's discovery was telegraphed to astronomical observatories by Harvard College Observatory, Cambridge, Mass.

Science News Letter, March 26, 1955

MEDICINE

## Abnormal Red Color Discovered in Blood

➤ DISCOVERY OF a new abnormal hemoglobin in human blood is announced by Drs. Demetrios A. Rigas, Robert D. Koler and Edwin E. Osgood of the University of Oregon Medical School at Portland, Ore.

Hemoglobin is the chemical that gives the red color to blood. The new abnormal hemoglobin was found in two members of a Chinese family. One of them had come to the doctors because of severe anemia. Both had suffered all their lives from getting tired too easily. Neither parent has the abnormal hemoglobin.

The new abnormal hemoglobin is the sixth discovered since Prof. L. C. Pauling of California Institute of Technology, Pasadena, characterized the first abnormal hemoglobin in sickle cell anemia. The new one is to be called hemoglobin H. Studies of it were reported in *Science* (March 11).

Science News Letter, March 26, 1955

## Questions

AERONAUTICS—How big is the Air Force's new Falcon missile? p. 197.

□ □ □

ASTRONOMY—Who first observed the moons of Saturn? p. 202.

□ □ □

BOTANY—From what country is the ginkgo tree believed to have originated? p. 207.

□ □ □

CHEMISTRY—What are some of the uses for petroleum coke? p. 197.

□ □ □

GEOPHYSICS—How many degrees has the earth warmed up in the past 50 years? p. 206.

□ □ □

PSYCHIATRY—What is meant by "screening in"? p. 199.

□ □ □

*Photographs:* Cover and p. 197, U. S. Air Force; p. 195, Stanford University; p. 199, Carter Oil Co.; p. 208, Eastman Chemical Products, Inc.

# • New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 771. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

*PRINTED WOOD projects for the home workshop are in nine colors on plywood panels measuring 19 by 24 by ¼ inches. No tracing, sanding or painting is necessary. The decorations are cut out on a jig saw and either screwed or tacked together. Fifteen separate projects, including bird houses and model cars, are available.*

Science News Letter, March 26, 1955

*SINGLE-PORTION POUCHES for mustard or ketchup are made of cellophane, coated with polyethylene. A perforated notch permits user to open and then squeeze just enough spice onto his hamburger or hot dog. Pouches can also be used for other foodstuffs or liquid preparations.*

Science News Letter, March 26, 1955

*FLEXIBLE DISHPAN made of rubber protects both dinnerware from breakage and sinks from being marred. Available in round or rectangular shapes, the dishpan can also be used around the house for laundering or cleaning.*

Science News Letter, March 26, 1955

*BASEBALL CAP for junior leaguers is made of tough plastic to give protection similar to that of the major league caps. Available in a range of sizes and in red, navy or royal blue, the chip-proof plastic head covering, shown in the photograph,*

*has a rubber headband and an inside cushion for added protection from pitched, thrown or batted balls.*

Science News Letter, March 26, 1955

*POLYETHYLENE TAPES are reinforced with glass. The pressure-sensitive tape has a tensile strength of 150 pounds per square inch of tape width and grips immediately upon contact. The non-pressure-sensitive tape has a 100-pound tensile strength and is activated by hand pressure after heating to from 275 degrees to 600 degrees Fahrenheit.*

Science News Letter, March 26, 1955

*SCREEN KIT for the do-it-at-home enthusiast contains all the materials needed to assemble and hang a light-weight, durable window screen of any size. Containing full frames of aluminum and screen cloth of vinyl-coated Fiberglass, the kit also has a mitre box to permit sawing of the aluminum.*

Science News Letter, March 26, 1955

*WATER-REPELLENT SUEDE leather for milady's clothes retains its natural hand or drape in snow or rain. Treated with silicones, the new leather is described as being capable of resisting abrasion, wrinkles, shrinkage and tearing.*

Science News Letter, March 26, 1955

*BANDSAW TABLE with a telescoping leg enables operators to change cutting angles precisely and instantly even while saw is in motion. The telescoping leg is a length of threaded drill rod which fits inside a sleeve made of 1¼ inch tubing. An adjusting wheel lengthens or shortens the rod as desired.*

Science News Letter, March 26, 1955



## Do You Know?

There are about 87,000,000 *poles* in the nation's power and communications lines.

*Electricity* produced by United States utilities in one week exceeded 10,000,000,000 kilowatts for the first time.

The Defense Department is now using *electronic computers* for quick, accurate determination of low bidders on contracts.

The number of *fires* in national forests during 1954 dropped 12% from the previous year.

The *suicide rate* in the United States dropped to an all time low in 1954 of 5.5 per 100,000, insurance records show.

Pupils who did not eat *breakfast* were found to have a significantly lower maximum work rate and work output in late morning hours than those who did.

An evaluation of a *nuclear power plant* that uses liquid uranium-bismuth alloy as fuel is underway at an Atomic Energy Commission laboratory.